M. S. CUMNER.

VISE.

APPLICATION FILED JULY 21, 1919.

1,379,747.

Patented May 31, 1921.

2 SHEETS—SHEET 1.

Fig. 1,

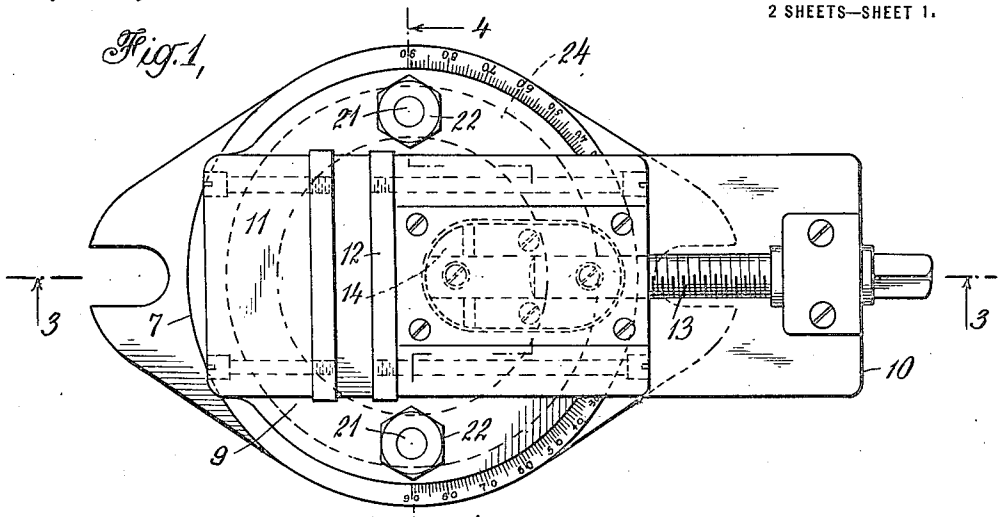


Fig. 2,

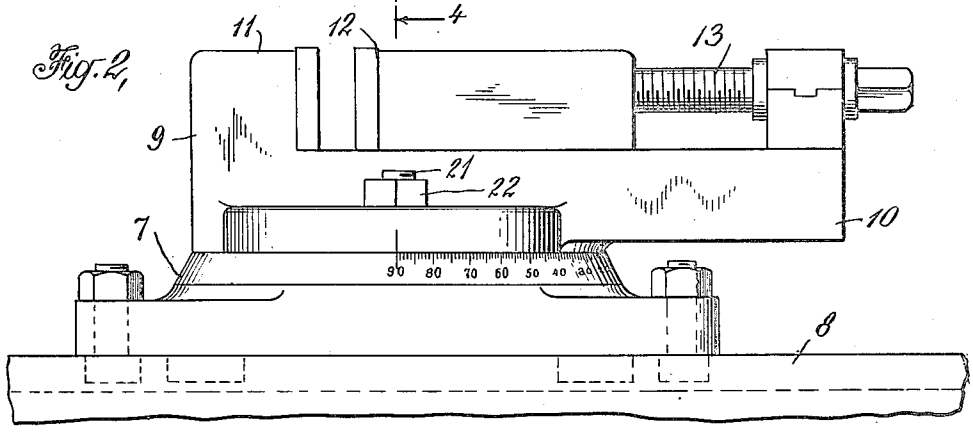
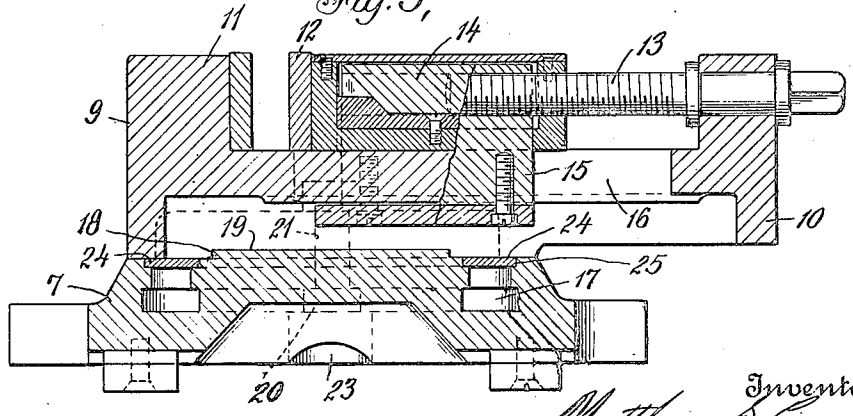


Fig. 3,



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2 SHEETS—SHEET 2.

Fig. 4,

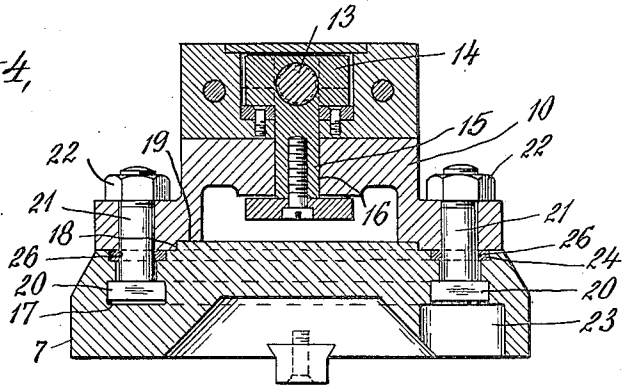


Fig. 5,

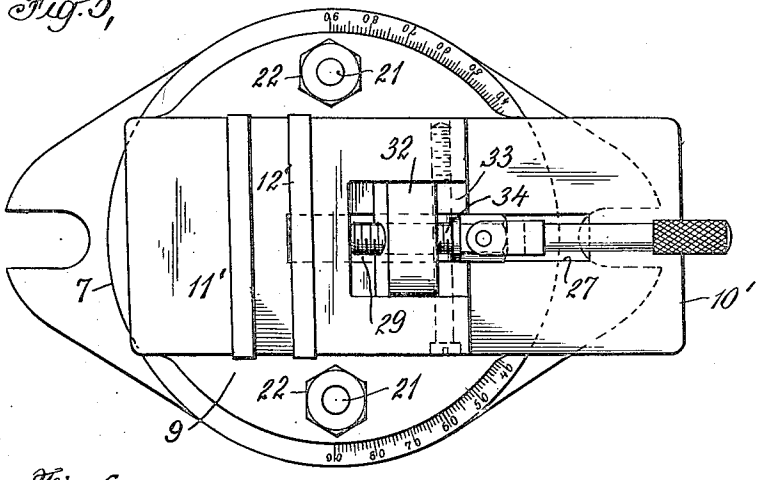
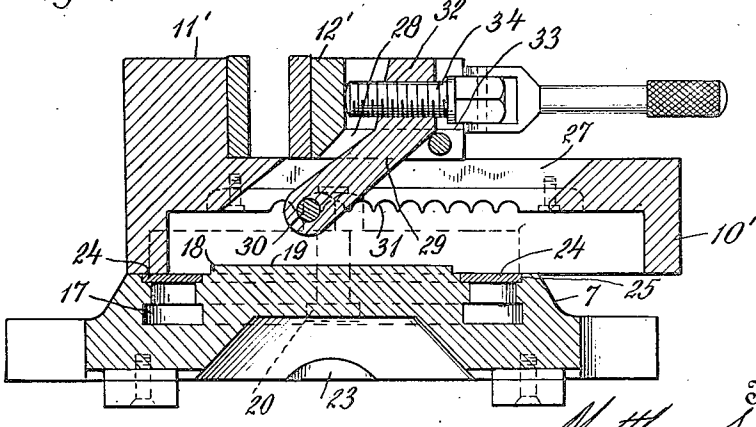


Fig. 6.



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UNITED STATES PATENT OFFICE.

MATTHEW S. CUMNER, OF NEW YORK, N. Y.

VISE.

1,379,747. Specification of Letters Patent. Patented May 31, 1921.

Application filed July 21, 1919. Serial No. 312,406.

To all whom it may concern:

Be it known that I, MATTHEW S. CUMNER, a citizen of the United States of America, and resident of the city, county, and State of New York, have invented certain new and useful Improvements in Vises, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My present invention relates particularly to vises of the rotatably adjustable type.

The objects of the invention are to provide a simple, practical, durable and inexpensive vise of this character and particularly to protect the relatively rotatable parts from becoming jammed with metal cuttings, filings, etc.

Briefly stated the invention comprises a clamp structure and a base on which the clamp is rotatably adjustable, said clamp being connected to the base by a bolt or bolts having head portions working in an undercut circular slot and which slot is protected against the ingress of metal chips and the like by a relatively rotatable closure plate overlying the slot and through which the bolts are passed.

Other features of the invention relate to the method of assemblage of the parts and to an improved structure of the clamp.

The accompanying drawings illustrate the invention embodied in two different practical forms, and it will be understood that the structure may be otherwise modified in form without departure from the true spirit and scope of the invention.

In said drawings:

Figure 1 is a plan view of the first form of the invention.

Fig. 2 is a side elevation thereof.

Fig. 3 is a longitudinal sectional view taken on substantially the plane of line 3—3 of Fig. 1.

Fig. 4 is a transverse sectional view substantially on the plane of line 4—4 of Fig. 1.

Fig. 5 is a plan view of the second form of the invention.

Fig. 6 is a longitudinal sectional view of this latter form.

The base 7 of the device is shown as of general circular form and constructed for instance, so that it may be readily clamped on a bed 8 of a planer or other machine tool, as indicated in Fig. 2.

9 designates the clamp structure which, in the first form disclosed is of an improved type and is particularly described and claimed in my copending application Ser. No. 312,407. This clamp consists generally of a base member 10 carrying a relatively fixed jaw 11, and supporting a movable jaw 12, which is actuated by a screw 13 through the medium of a connecting block 14 which is loosely seated in the movable jaw and has a dependent portion 15 slidably guided in the slot 16 in the clamp base 10.

One of the relatively rotatable parts of the device is constructed with an undercut circular slot to receive the bolts which secure the two parts together. In the present disclosure this undercut circular slot is formed in the supporting base 7, as indicated at 17 and the parts are rotatably engaged by a circular upstanding boss 18 on the base engaging in a corresponding socket 19 in the underside of the clamp base. The clamp base is shown as rotatably confined to the supporting base by bolts having head portions 20, working in the widened undercut portion of the slot and shank portions 21 extending up through the reduced mouth portion of the slot and through the base 10 of the clamp, said bolts having nuts 22 engaged at their upper ends for securing the clamp to the base and for holding it in its relatively adjusted position. The undercut slot which usually is in the form of a complete circle is shown as closed at the bottom (see Figs. 3 and 4) to prevent the bolts from becoming dislodged when the nuts 22 are removed. Access to this slot is provided for the bolts by an entrance way shown at 23 in Fig. 4, extending from the bottom of the base up into the widened undercut portion of the slot, said entranceway being at least the width of the bolt head so as to admit the same into the undercut passage provided therefor.

The undercut slot is protected against the entrance of metal cuttings and other objectionable matter by a closure plate shown in the form of a ring or annulus 24 rotatably seated in a trackway 25 provided at the mouth of the circular slot. This ring is formed with suitable apertures at diametrically opposite points for the passage of the shanks 21 of the securing bolts, as indicated at 26 in Fig. 4.

From this it will be clear that the annular plate 24 effectually closes the under-

cut slot and prevents any foreign matter falling down into said slot where it would interfere with the free adjustment of the parts.

In Figs. 5 and 6 I have shown the invention embodied in a device having a form of clamp on the order of that disclosed in my prior patent #1,114,970 of October, 27. 1914. This clamp is constructed with a base portion 10′ and with a relatively fixed jaw 11′ as in my prior patent, but said base is provided in this improved form with only a single longitudinal slot 27 therein and the movable jaw element 12′ similarly is provided with only a single slot 28 in line with the slot in the base. Also a single link 29 forms the connecting medium between the base and movable jaw, said link being disposed in the registering slots in the jaw and base and having a pin 30 at its lower end for engagement with the stops 31 on the underside of the base and having a widened head 32 at its upper end sliding on the rearwardly extending shoulders 33 provided on the jaw on the opposite sides of the slot therein. The jaw closing screw 34 is engaged in this head at a point substantially in line with the body of the link 29 and the thrust is thereby centralized and twisting strains are obviated.

Another advantage arising from this construction is that the jaw is not weakened to such an extent as when a plurality of slots are formed therein, as in my prior patent.

In addition to forming a closure for the circular confining slot, the closure plate also forms a guide for positioning the securing bolts during the assemblage of the parts. This closure plate also, to a certain extent, assists in guiding and aiding the free swiveling of the parts.

What I claim is:

1. A rotatably adjustable vise comprising a base provided with an undercut circular slot, a closure for said slot rotatably adjustable on the base, a clamp rotatably mounted on the base over said rotatable closure, and bolts confining said clamp to the base having head portions working in the undercut slot, said rotatable slot closure having openings for the passage of said bolts therethrough.

2. A rotatably adjustable vise comprising a base provided with an undercut circular slot, a clamp rotatably adjustable on said base above said slot, a closure for said slot interposed between the base and clamp and rotatably adjustable with said clamp, a bolt for rotatably confining the clamp to the base having a headed portion working in the undercut slot, and a shank portion projecting up through the closure and made fast to the clamp.

3. In a rotatably adjustable vise, a base provided with an undercut circular slot, an annular closure plate seated over said slot and rotatably adjustable on the base, a rotatably adjustable clamp mounted on the base, and a confining bolt having a head working in the undercut slot and a shank portion extending up through the annular closure and secured to the clamp.

4. In a rotatably adjustable vise, the combination of relatively rotatable base and clamp members, one of said members having an undercut circular slot, a confining bolt having a head portion working in said undercut slot, and a shank portion made fast to the other of said members, and a rotatable plate interposed between the two members and closing the circular slot in the one member, said rotatable closure plate having an opening through which the confining bolt extends.

5. In a rotatably adjustable vise, relatively rotatable clamp and base members, one of said members having an undercut circular slot therein closed at the bottom except for an opening which is the full width of the undercut portion of the slot, a confining bolt having a head working in the undercut portion of the slot and engageable in said slot through the opening aforesaid, said bolt having a shank portion extending up through the slot and made fast to the other member of the vise, and a relatively rotatable closure plate seated over the slot and provided with an opening therethrough for the passage of the shank of the bolt.

6. A rotatably adjustable vise comprising a base provided with an undercut circular slot, and an annular trackway above said slot, an annular plate seated on said trackway and closing the entrance to the slot, a clamp rotatably mounted on the base, and securing bolts having head portions confined in the undercut portion of the slot, and shanks extending up through the closure plate and made fast to the clamp.

7. A rotatably adjustable vise comprising a base having an undercut circular slot in the top thereof and an entrance-way opening from the bottom of the base into the undercut portion of the slot, an annular closure plate rotatably seated over the slot, a clamp rotatably mounted on the base, and confining bolts having head portions entered in the undercut portion of the slot through the entrance-way in the bottom of the base, and shank portions extending up through the rotatable annular closure plate and secured to the clamp.

In witness whereof, I hereunto set my hand this 18th day of July 1919.

MATTHEW S. CUMNER.